III

A List of Agricultural Implements and Machines which have been tested in India during the year ended 30th September 1892, and of those in use which are reported to have met with more or less marked success, the latter, *i.e.*, the successful implements, being indicated by entries in italics in column 2.

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No.	Designation of Implements.	Use.	Special advantages or instructions.	Price.	Where procurable.	Name and designation of Official Reporter.	Opinion.	Extent to which used by Native Agriculturists.	Remarks by Official Reporter.
1	2	3	4	5	6	7	8	9	10
				R a. p.		PLOUGHS.			
1	*Sibpur wrought-iron soil-inverting plough.*	Soil-inverting	Being made of wrought-iron, can be easily repaired. Is a cheap soil-inverting plough.	6 8 0	Agricultural Department, Bengal.	Commissioner of Burdwan.	Useful . . .	...	The opinions of the reporting officers are respectively as follows :— A Sibpur plough was worked at Nayagram and two at Tarka, in the district of Midnapur and were all found useful.
						Commissioner of the Presidency.	Durable but too heavy for ordinary country bullocks.		
						Commissioner of Orissa.	.....	...	Two Sibpur ploughs were tested in the Cossimbazar estate in Murshidabad. Though well spoken of, and considered durable, they are said to be too heavy for the ordinary country bullocks, and are not therefore popular with the raiyats, who want a cheap and light implement.
						Mr. B. C. Basu, Assistant Director, Land Records and Agriculture, Bengal.	.....	...	Two Sibpur wrought-iron ploughs were tried in the Government estate of Banki in Cuttack, but did not prove successful. Half a dozen Sibpur ploughs were supplied by the Agricultural Department for the Madhupur estate, but did not meet with any success, partly owing to the soil being clayey and sticky, and partly to the ploughs themselves being too heavy.
									A jotedar of the Western Duars bought a Sibpur plough, and has been constantly using it on his farm.
						District Deputy Collector, Broach.	Simple in construction and easily repaired by any blacksmith. The bullocks have harder work than with the country plough, but not more than an average pair will stand.	Not yet adopted by ryots.	The District Deputy Collector, Broach, reports that the plough works to a greater depth, turns the soil better, and loosens a given area in less time than the local plough. It was tried in the Ankleshwar Taluka of Broach side by side with the local plough in the presence of cultivators, and so far as could be judged from this partial trial may be an improvement on the local article.

						Commissioner of Burdwan.	Unsatisfactory . .	...	The reporting officers state as follows :— A private gentleman at Majida, in the Burdwan district, bought a "Hindustan" plough, but it failed to give satisfaction.
2	Hindustan plough. (Illustration supplied and can be had.)	For ploughing both light and heavy soil.	Adapted for any kind of cattle. Cheap and useful in breaking up waste land.	No. 1— 10 8 0 No. 2— 11 8 0	Messrs. Jessop & Co.	Collector of Monghyr.	Particularly suited to those who find it difficult to keep a large amount of cultivation in good order.	Not used at all by natives.	The plough has been used by Mr. Robertson, of Dowlatpur, for the last seven or eight years. The number used in Begumserai and other indigo concerns is reported by him to be increasing annually.
						Sub-Divisional Officer of Kishenganj in Purnea.	An effective and good plough.	...	Some of the well-to-do men have got some ploughs, but do not use them.
3	Watt's D. E. plough.	Ditto	Adapted for any kind of cattle.	10 0 0	Richmond, United States of America, and Government Farm, Cawnpore.	Ditto	An effective and good plough.	...	The Sub-Divisional Officer reports that some of the well-to-do men have got some ploughs, but do not use them.
4	*Watt's chain-plough.*	Inversion of soil and ploughing heavy soils.	Easy draught, adaptability to different modes of preparing soils.	7 0 0	Government Farm, Cawnpore.	Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	.....	Is used by many well-to-do agriculturists throughout the province. Some have been indented for from other provinces.	The Assistant Director, Agricultural Department, North-Western Provinces and Oudh, reports that these ploughs maintain their reputation and continue in demand by cultivators in the provinces, 35 having been sold, 5 given on trial, and 13 hired out.
5	*St. Joseph's plough.*	For ploughing both heavy and light soil.	.....	8 0 0	Mr. St. Joseph, Civil Engineer, Bankipur.	Sub-Divisional Officer, Kissenganj, Purnea.	Heavier than Watt's D. E. plough, not as strong and less effective.	...	About 25 ploughs were purchased in the Kissenganj Sub-Division, but were not used as they were found to be too heavy for the ordinary local bullocks.
6	*Cultivator with 3, 4, 5, and 6 shares (native plough).*	...	....	1 0 0 to 15 0 0	Made at Manjhaul Factory by country carpenters.	Collector of Monghyr.	.....	Used extensively.	.....
7	*Cultivator with 3 shares made at Dowlutpur Factory.*	...	Useful in clearing weeds.	About 7 8 0	Can be made readily from a pattern.	Ditto	.....	Borrowed occasionally.	These ploughs have been in use for the last 20 years. They are very useful in getting a large area cultivated in a short time, and without much expenditure of manual labour.

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	2	3	4	5	6	7	8	9	10
				R a. p.		PLOUGHS—*contd.*			
8	*Ransome's English plough.*	For breaking up the soil.	.....	10 0 0	Messrs. Jessop & Co.	Collector of Monghyr.	Found serviceable .	...	This plough proves serviceable when used preparatory to the native plough.
9	English plough	...	.....	12 0 0	Calcutta .	Ditto.	Indifferent . .	...	This is used only in indigo factories.
						Commissioner of Burdwan.	.....	....	A European plough was purchased for the indigo factory at Jhowdanga, in the Burdwan district, but as the factory stopped work, no use was made of it during the year.
10	*Kaisar plough*	For turning and breaking the soil.	Useful for soft soil, cheapness, lightness (only 16 seers in weight) and simplicity of construction. The share can easily be removed any time and fixed at will.	5 0 0	Government Farm, Cawnpore.	... .	Better than those locally made.	Not adopted generally, being too heavy for ordinary bullocks.	The Director of Land Records and Agriculture, Punjab, reports that this plough has been made use of, and it is acknowledged that they are better than the country plough, two ploughings being equal to some six ploughings with the country plough. But the cultivators have not adopted it for the reason that they find that with the country plough they can use ordinary bullocks which do not cost a large sum, while the Kaisar plough requires strong oxen of a much higher price. The Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh, reports that these ploughs maintain their reputation and continue in demand by cultivators in the North-Western Provinces, 10 were sold during the year under report, 2 given on trial, and 3 on hire.

11	*Baldeo plough (Cawnpore made.)*	Ploughing light soils.	Cheapness and effective work. Simplicity and cost. Inverts the soils.	2 0 0	Ditto	Syed Mahomed Hadi, Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	.....	Is used by many well-to-do agriculturists throughout the province. Some have been indented for from other provinces.	The Assistant Director, Agricultural Department, North-Western Provinces and Oudh, reports that these ploughs maintain their reputation and continue in demand by cultivators in the North-Western Provinces During the year 30 were sold, 7 given on trial, and 3 hired out.
12	*Swedish plough*	...	Efficiency in ploughing and in inverting the soil especially in breaking up grass-lands.	21 10 0	Akerbruks, Redskap & Co., Ofvernrus, Sweden.	Director of Land Records and Agriculture, Central Provinces.	.....	Very few have been sold and none during the year.	The Director reports that this plough has continued to give satisfaction on the Experimental Farm at Nagpore.
				WINNOWING AND CLEANING MACHINES, CHAFF-CUTTERS, ETC.					
13	*Paddy-husking mill.*	...	.....	...	...	Collector of Birbhum.	Useful . . .	...	Two paddy-husking mills were tested and found useful at Bolepur, in the Sadar Sub-Division of the Birbhum district.
14	*Chaff-cutter* .	For cutting fodder.	.....	10 0 0	Joseph & Co. .	Collector of Monghyr.	Very good . .	...	This implement is used solely in factories.
15	*Mayfurth's hand thresher.*	...	Cheapness and rapidity in threshing wheat.	127 6 0	Mayfurth & Co., Frankfort-on-Maine, Germany.	Director of Land Records and Agriculture, Central Provinces.	.....	One has been ordered for a native landlord.	The Director considers it a most effective implement and likely to find favour if its sale was properly pushed.
16	*Dell's Winnower.*	...	Winnowing and cleaning threshed grain.	265 0 0	Messrs. Dell & Co, of Mark Lane, London.	Ditto	.....	...	The Director considers it to be a most durable and satisfactory implement.

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			WINNOWING AND CLEANING MACHINES, CHAFF-CUTTERS, ETC.—*contd.*						
17	*Hunt's "Simplex" chaff-cutter.*	For chopping fodder.	Cutting up fodder expeditiously, economy of work and great efficiency.	R a. p. 35 6 0	Superintendent, Government Farms, Nagpore. Cawnpore, Messrs. R. Hunt & Co., England.	Director of Land Records and Agriculture, Central Provinces. Syed Mahommed Hadi, Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	....	... Is used by many well-to-do agriculturists throughout the North-Western Provinces. Some have been indented for from other provinces.	A cheap implement for its work, the Director, Land Records and Agriculture, Central Provinces, however, says that the knives are apt to bend. The Assistant Director, Agricultural Department, North-Western Provinces and Oudh, reports that these machines maintain their reputation and continue in demand by cultivators in the North-Western Provinces and Oudh, 13 having been sold during the year.
18	*R. Hunt's Kibbling machine.*	For crushing all sorts of grain.	Lightness and simplicity, rapidity of work, and labour saving.	35 0 0	Messrs R. Hunt & Co., England and Government Farm, Cawnpore.	Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	.....	Is used by many well-to-do agriculturists throughout the province. Some have been indented for from other provinces.	The Assistant Director, Agricultural Department, North-Western Provinces and Oudh, reports that these machines maintain their reputation and continue in demand by cultivators in the North-Western Provinces and Oudh. Fourteen were sold during the year.
19	*Nahan Kibbling machine*	For kibbling grain, etc.	These kibblers are merely imitations of Messrs R. Hunt's "the Simplex" (Kibblers). They are of three sizes.	No. 1 25 0 0 „ 2 20 0 0 „ 3 10 0 0	Sirmoor Factory, Nahan, near Umballa and Government Farm, Cawnpore.	Ditto .	This mill is a true copy of Messrs. R. Hunt's "the Simplex" but inferior in workmanship.	This machine being cheap, many people came forward to buy it.	The Assistant Director reports that five mills were sold during the year.
20	Chicago Winno-	Winnowing	Working easy and	100 0 0	Himalayan Com-	Ditto .	It is light and portable,	Not used by natives.	The Assistant Director, North-Western Provinces

	wer.	grain.	winnowing satisfactory.		pany, Chicago, United States, America.		works efficiently, should be used when economy of labour is an object.		and Oudh, says that its price appears to be altogether prohibitive besides it is a new invention.
					WATER-LIFTS,	CHAIN-PUMPS, BUCKETS, ETC.,			
21	Barrakar water-lift.	Used for lifting water.	All its parts, except the wheel, axle, handle and chain, are made of cast-iron, light and easy to work. Wood does not at all enter into its construction.	35 0 0 to 55 0 0	Superintendent Iron Works, Barrakar, Bengal.	Commissioner, Presidency Division.	.....	...	The Commissioner, Presidency Division, reports that two Barrakar pumps were tested in the estates of the minor zemindar of Cossimbazar, but were not very popular with the raiyats as they required much manual labour.
						Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	In working it is not equal to Cawnpore water-pump, its lifting power is limited to 400 cubic feet of water per hour from a depth of 5 feet.	Not used by natives	The Assistant Director, North-Western Provinces and Oudh, reports that it has been found that the portions of cast-iron sometimes break away, and the machines cannot come up to the Cawnpore water-lift.
22	*Cawnpore chain pump.*	For lifting water from a depth of 5 to 35 feet.	Very efficient and useful.	From 40 0 0 to 65 0 0 according to the length of pipe.	Government Farm, Cawnpore.	Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	.....	Is used by many well-to-do agriculturists throughout the province. Some have been indented for from other provinces.	The Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh, reports that these pumps maintain their reputation and continue in demand by cultivators in the provinces, 17 having been sold, 12 given on trial, and 13 hired out during the year.
23	*The "Empire" water-lift improved.*	Lifting water .	Portability, simplicity of construction, lightness. It is worked by the hand by two men at a time.	175 0 0	J. L. Houser, Lucknow and Calcutta.	Ditto .	It is very useful for irrigating garden or field crops from wells.	Not used by natives as it has only recently come out.	The Assistant Director reports that this machine is an improvement over the old "Empire lift" and has been rendered much lighter and more durable owing to the removal of the large wheel from the old pattern and replacement of the old heavy wooden stand by an iron frame. It raises on an average about 4 cubic feet of water per minute from a depth of 20 feet.
24	*"Baldeo" water-lift.*	Ditto	Remarkably simple in construction, easily portable, it economises labour and is cheap; ordinary blacksmiths can construct one like it by having a look at it. Only one bullock and one man required to work it.	50 0 0	Government Farm, Cawnpore.	Ditto .	Specially adapted for irrigation from canal and tanks. It will answer the purpose both of a garden or field irrigation where the depth of water level does not exceed 5 feet; ought to be popular.	Unknown to agriculturists being quite a new invention.	The Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh, says that the lifting power of the machine is as great as it is simple. Considering its simplicity the quantity of water raised by it is very great, being on an average 280 cubic feet per hour.

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				WATER-LIFTS, CHAIN-PUMPS, BUCKETS, ETC.—contd.					
				R a. p.					
25	Sullivan's water-lift.	Lifting water .	It is an improvement on the country *Pur* and its chief advantage consists in the bucket of water emptying itself automatically. The machine is worked with two bullocks. The wheel on which the two ropes attached to the buckets are wound up, can be made by disconnecting it from the beam moved by the oxen, to turn on its axis by the weight of the bucket, which is by this action let down to be filled up again, then as the beam is again connected with the wheel the bullocks resume their forward circular motion. By this arrange-	116 0 0	C. C. Sullivan, Esq., Rurkee.	Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh.	. .....	Not used by natives being new.	The Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh, states that the machine was tried several times on the farm, but each time it was worked, some part or other (being made of cast-iron) broke away. It will be finally reported on after further trial in the coming year.

			ment a short respite is insured to the animal from the time the bucket is drawn out till it is emptied. Thus an economy is effected in labour. The machine is simple to understand and work, besides all its parts taken together will not weigh more than a few maunds, which fact makes it easily portable.						
26	*Smeaton's water-lift gear.*	Used as a motive power to chain-pumps and Persian wheels.	Economy of labour, durable, and easy going.	58 12 0	J. Blandford. Esq., Canal Department, Shahjahanpore.	Ditto	The gear is strong and easy going. It is useful, especially for working chain-pumps or Persian wheels.	Not used by natives.	The Assistant Director reports that it can be worked by one bullock and that it raises 115 cubic feet of water per hour from a depth of 35 feet. It was not favourably reported on last year. Further trials made during the year justify the opinion recorded by him in column 8.
27	*Improved Cawnpore double pump.*	For irrigation from canal or pond.	Two Cawnpore 5 or 6 feet chain-pumps of 4½ inches diameter can be worked at a time by means of a gearing, and only one bullock is required to work the same. It raises 8,200 cubic feet of water per hour.	250 0 0	Government Farm, Cawnpore.	Ditto	.....	The heavy cost, R250, is against its sale.	The Assistant Director, Land Records and Agriculture, North-Western Provinces and Oudh, says that this pump has proved to be an excellent lift for raising water from a depth of 3 or 4 feet.
28	Hand force pump.	.....	Raising water for drinking purposes from depths of 60 feet or less.	127 0 0	Messrs. Richardson and Cruddas, Bombay.	Director, Land Records and Agricultural Department, Central Provinces.	.....	*Nil*	The Director, Agricultural Department, Central Provinces' report is the same as last year, *viz.*, that the pump works satisfactorily, but will never be adopted for irrigation.
29	Hand-lift pump	.....	Ditto 25 feet or less	23 0 0	Ditto	Ditto	.....	*Nil*	Ditto ditto ditto.

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					BONE CRUSHERS AND SUGAR MILLS.				
				R a. p.					
30	*Renwick's patent Beheea pattern sugar-cane mills.*	Crushing sugar-cane.	Extraction of a large percentage of juice in a short time.	Not for sale. Let on hire.	Messrs. Renwick & Co., Kushtea.	Commissioner of the Presidency Division.	.....	Used extensively in the Kushtea and Meherpur Sub-Divisions of the district of Nadia, and in the Bongong and Jhenidah Sub-Divisions of the district of Jessore.	
					Pabna, Itkola, Soojanagar, Konabaria, Kasinathpur, Rottonganj, and Arrankhola.	Collector of Pabna.	.....	Eight hundred and twenty-one mills used in the Pabna district during the season 1891-92.	
						Commissioner of Dacca.	.....	Used in certain Government estates in the district of Faridpur only.	
31	*Beheea cane mills (two-rollers and three-rollers).*	For extracting juice from sugarcane.	Cheap, effective, and simple.	R80 to 140	Thomson and Mylne, Beheea, and their agencies.	Commissioner of Burdwan.	.....	Becoming numerous in Burdwan.	The Collector of Bankura states that the Beheea sugarcane pressing mill is the only advanced agricultural implement which was found useful in his district.
						Collector of Birbhum.	.....	One thousand nine hundred and thirteen mills used in the district of Birbhum during the year under report.	

						Commissioner of the Presidency Division.	.....	Used extensively in the Sub-Divisions of Kushtea, Meherpur, Pongong and Jhenidah.	
						Commissioner of Chota Nagpur.	.....	Four hundred and twenty-six mills were used during the season 1891-92, in the Palámau district.	
						Collector of Monghyr.	Very efficient machine for extracting juice from sugarcane.	A large number in use, chiefly on hire.	
						Sub-Divisional Officer of Kissenganj.	An excellent mill	...	These mills are cheap and more effective than hand-mills. They are much liked, and are largely used by the raiyats. The original primitive mills have almost been entirely replaced by them.
						Commissioner of Orissa.	.....	...	Two and three rollered Beheea mills were tested in the Madhepura estate in Cuttack. They are reported by the Manager to have been approved of by the tenantry. The two-roller mills have been purchased by them for their own use. The two iron pans supplied with the mills for the manufacture of *gur* are also said to have proved useful. They not only yielded large outputs of *gur*, but were also found to be very durable. In the Khurda Sub-Division in Puri, eight Beheea sugar mills out of nine were worked. They were lent out to the raiyats at the rate of eight annas a day, and were fully appreciated by them.
						Mr. Banerji, Assistant to Director of Land Records and Agriculture, Bengal.	Portable and effective.	...	Thomson and Mylne's three-roller mill is very greatly appreciated by the raiyats in the neighbourhood of the Burdwan Farm, who are very anxious to use them in place of the two-roller mills at present used by them. In the Farm itself the mill has worked most satisfactorily.
									The Director of Land Records and Agriculture, Punjab, reports that the advantages of these mills are thoroughly appreciated by the people in the Rotak, Hoshiarpur, and Lahore Districts, that they continue to be used and are liked and that they are driving the old *kohlú* out of use.
32	*Sugarcane mill (manufactured at Rurki).*	...	...	...	...	...	.....	...	The Director, Agricultural Department, Punjab, states that these iron mills are a great success and that the zamindars have taken kindly to them.

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33	*Iron Roller Sugar Mill.* (1) *three-rollers* (2) *two-rollers*	...	Efficiency in the extraction of cane juice and improvement in quality of syrup.	R a. p. (1) 128 0 0 (2) 50 0 0	Messrs. Thomson and Mylne, Beheea	Director of Land Records and Agriculture, Central Provinces.	.....	(1) A few in use . (2) Has come largely into use in the Betul district. Sale extending slowly elsewhere.	The three-roller mills are reported to do "33 per cent. more work than the two-roller mills and gave 68 per cent. juice instead of 64 per cent."
34	*Steel Roller Sugar Mill (Roger's).*	...	Efficiency in the extraction of cane juice and improvement in quality of syrup.	95 0 0	Manager, West's Patent Press Company, Saharanpur.	Director of Land Records and Agriculture, Central Provinces.	.....	.....	An excellent mill, durable and effective.
35	Poona Iron Sugar Mill.	...	...	200 0 0	Subrao Raoji Chauhan, Poona.	Director of Land Records and Agriculture, Bombay	.....	Largely used .	The Director says that these mills are sold in large numbers and are gaining ground everywhere, and that it is preferred by Poona cultivators to any other mill.
36	Iron Sugar Mills.	...	...	...	...	...	.....	.....	The Board of Revenue, Madras, reports that a special enquiry was made during the year as to the extent to which portable iron sugar mills of various sorts had been introduced of late years into the Presidency. Mr. Benson, the Deputy Director of Land Records and Agriculture, sums up the results of the enquiry thus: "Except in Ganjam and South Canara the iron mills are making their way throughout the Presidency. In Godavary, Bellary, the greater part of Coimbatore, and in Trichinopoly, they have almost superseded the wooden mills. In Vizagapatam, Kurnool, Anantapur, Cuddapah, North and South Arcot and in Salem, though the iron mills are used in parts of the districts to some extent, there is still ample scope for their more extensive use. In this connection attention may be drawn to the remarks of the Collector of Coimbatore, who thinks that if manufacturers take steps to bring their mills to notice the iron mills may drive out the wooden ones entirely."

37	Bone Mills .	For crushing bones.	...	£75	England	Collector of Monghyr.	.....	.....	This implement is used only in the indigo factories.
					HOES, HARROWS, GRUBBERS, ETC.				
38	Drills . .	...	...	20 0 0	...	Collector of Monghyr.	.....	...	.....
39	*Planet Jr. drill*	...	...	...	...	Mr. N. N. Banerjee, Assistant to Director of Land Records and Agriculture, Bengal.	.....	...	This implement proved very useful in the Burdwan Farm for sowing wheat in straight and regular lines.
40	Rakes . .	...	...	5 0 0	...	...	.....	...	.....
41	American axes, hatchets, sickles, drill hooks.	...	...	...	Messrs. T. E. Thomson & Co., Calcutta.	Sub-Divisional Officer, Kissengunj, in Purnea.	Very nice and useful.	Not used much.	The people in general cannot afford to pay for them.
42	*Planet Jr. handhoes.*	...	...	...	Ditto .	Mr. B. C. Basu, Assistant to Director of Land Records and Agriculture, Bengal.	.....	...	The handhoe is a most effective implement for stirring and cleaning land, and is well suited for crops which are sown or planted in rows.
43	*Croski clod-crusher.*	...	..	...	Ditto .	Ditto	.....	...	This implement has been found useful in the Sibpur Farm in reducing clods and producing a sufficiently firm tilth for small seeds.
44	Best cast-steel draw hoes, 8 inches.	The same implement as that used for singling turnips, mongals, etc., and for weeding in England.	Light and handy, Specially useful for weeding between rows.	R1-4-0 (can be got from England at half the price).	Messrs. Vishnu Sadashir & Co. of Poona and Messrs. Palikar & Co. of Bombay.	Mr. Mollison, Superintendent of Farms, Bombay Presidency.	Very useful for weeding and earthing up lucerne, potatoes and vegetables sown or planted in ridges.	Not as yet used by ryots.	The Superintendent reports that the Government farm-hands use these hoes with expertness and ease.

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				R a. p.					
						COTTON GINS.			
45	Cotton gin	Used for separating cotton wool from seed.	Simple and durable, as its parts are entirely made of iron, except the frame to which the whole machine is attached.	10 0 0	A. Buttler, Esq., Muzafferpur, Tirhoot.	Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	Does not run smoothly. The working is not effective, the cotton wool being not thoroughly separated from the seed.	Not used by natives	Price too high to suit the natives. The country-made gin costs one-tenth the price fixed for this and is much more effective.
						MISCELLANEOUS.			
46	*English scythe*	...	...	...	...	Director of Land Records and Agriculture, Punjab	....	...	The Director states that the scythe has been found useful for gardens, but not for cutting grass in fields.
47	Nettlefold and Sons' straight reap-hooks.	...	Made of best cast-steel and thus keeps a fine edge.	1 0 8			.....	..	
48	Nettlefold and Sons' cranked reap-hooks.	...	...	1 0 8			.....	...	The Superintendent of the Khandesh Farm reports that these implements continue to work with success. The hay forks are useful for stacking

49	Yates & Co.'s reap-hooks.	...	...	0 12 6	Hormusji & Co., Bombay.	Superintendent of the Khandesh Farm.	.....	...	hay and particularly handy when large hay-r cks are being built. The reaping hooks are useful for grass-cutting and the hay-knife for cutting pit or stack ensilage.
50	Nettlefold and Sons' hay forks with two prongs.	...	Very light .	1 10 8			.....	...	
51	Rollins & Co 's l i g h te ning hay-knives.	...	Specially constructed for the work for which they are intended.	4 0 0			.....	...	
52	*Walter A. Wood's Sulky Mower.*	...	Rapidity in hay-making.	487 10 2	Messrs. Macbeth & Co., Bombay.	...	.....	Not in use by ryots	The Director of Land Records and Agriculture, Central Provinces, states that these implements were tried on extensive grass lands at Pachmarhi and notwithstanding the absence of trained supervision gave very satisfactory results, cutting from 3 to 4 acres a day with bullocks.
53	*Do. Rake* .								The Director, Agricultural Department. Bombay, reports that the mower does work in a day equal to that performed by 50 men, bushes and thorns must, however, be removed and pits and falls levelled down. The mower has stood two seasons' work well. Grass can be cut with it at 10 annas per acre as against 2-8-0 by manual labour. Two hundred acres can easily be cut in five or six weeks, and the saving in cutting large grass kuraus will repay the cost of mower and rake in two seasons, and the hay can be made green. Spare parts should be kept in stock.
165	Mower. Rake. Tedding machine. Elevator.	For use in grass operations.	...	Not known. Do . £12 7 6 Not known	Walter, Wood & Co., New York.	Deputy Commissioner, Dera-Ismail-Khan.	These machines have not been utilized as yet as no one knows how to work them. They seem unsuited for the rakhs of this district. They were sent to this district by the Forage Officer, Rawalpindi, for use in the Miran Rakhs.	...	.....

A List of Agricultural Implements and Machines which have been tested in India during the year ended 30th September 1891, and of those in use which are reported to have met with more or less marked success, the latter, i. e., *the successful implements, being indicated by entries in italics in column 2*—continued.

No	Designation of Implements.	Use.	Special advantages or instructions.	Price.	Where procurable.	Name and designation of Official Reporter.	Opinion.	Extent to which used by Native Agriculturists.	Remarks by Official Reporter.
1	2	3	4	5	6	7	8	9	10
				R a. p.					
55	*Laval separator, "The Windsor."*	For separating cream from milk.	The cream can be separated from the milk immediately after the milk is drawn.	450 0 0	H. N. Patuck & Co., Agents Dairy Supply Company, Bombay.	Assistant Superintendent, Poona Farm. Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	It is well suited for a large dairy establishment. It separates 35 gallons of milk per hour and can easily be worked by one man. The machine is solid and well made and of great use in hot climates.	Over 100 separators have been sold either directly from England or by the Dairy Supply Agent, Bombay, up to date, mostly to natives. These machines are not at present used in the North-Western Provinces and Oudh and the Central Provinces.	The Director of Land Records and Agriculture, Bombay, says that the use of these improved dairy appliances is largely extending throughout the Presidency. A number of separators are at work in rural districts where milk is cheap. The cream is railed to Bombay and there made into butter. The larger number of the machines are worked in towns.
56	*Laval separator, "The Baby."*	For separating cream from milk.	The cream can be separated from the milk immediately after the milk is drawn.	235 0 0	H. N. Patuck, & Co., Agents, Dairy Supply Company, Bombay.	Assistant Superintendent, Poona Farm. Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	Useful for small herds. The machine is solid and well made and of great use in hot climates.		The Director of Land Records and Agriculture, Central Provinces, reports that a "Baby" cream separator and butter-making apparatus was purchased for R479-10-0 from the Dairy Supply Company, Bombay, that it gave very satisfactory results, and that it has been made over to a person desirous of starting a dairy supply in Nagpur free of hire for six months and thereafter to be paid for.
57	*Lloyd, Lawrence & Co.'s refrigerator.*	For æra'ing and cooling milk.	By refrigerating, the animal odour is driven from the milk. Refrigerated milk keeps well and the process is specially necessary in hot and thundery weather.	75 0 0	H. N. Patuck & Co, Agents Dairy Supply Company, Bombay.	Assistant Superintendent, Poona Farm.	A necessity in the dairy if milk has to be sent any distance by road or rail.		The Director of Land Records and Agriculture, North-Western Provinces and Oudh, reports as

58	*The "Victoria" Churn.*	Used for churning cream or whole milk.	Complete separation of butter from butter-milk without either being touched by the hands.	60 0 0	H. N. Patuck, & Co., Agents, Dairy Supply Company, Bombay.	Assistant Superintendent, Poona Farm. Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	Well suited for moderate sized dairies. Very durable and perfectly efficient.		follows on these machines:—As regards the "Windsor" and "Baby" separators, he says that the former separates 4½ and the latter 1½ maunds of milk per hour, and that after the cream has been extracted the skim milk is perfectly good for cooking purposes and can be used even to make Indian sweetmeats with. As to the "Cunningham" butter-maker he says that 10lb of butter can be worked in it at a time.
59	*The "Cunningham" butter-worker.*	Used for separating water from butter.	Butter can be separated from water without being touched with the hands.	50 0 0	H. N. Patuck, & Co., Agents, Dairy Supply Company, Bombay.	Assistant Superintendent, Poona Farm. Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	Can only be used if the cream has been churned at a temperature low enough to produce firm butter. It is a simple but very useful machine.		
60	Set of cheese-making appliances:— (a) Cheese tub. (b) Cheese press. (c) Cheese curd mill.	Cheese-making.	Manufacture of European cheese in India.	300 0 0	Dairy Supply Company, Limited, Museum Street, London.	Assistant Director of Land Records and Agriculture, North-Western Provinces and Oudh.	The machines are durable and well made and make fairly good cheese.	Not used in the provinces.	The Assistant Director states that these appliances will be tried again during the coming year, as only a few trials were made with them during the year under report.

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